



**Sacramento  
and  
San Joaquin  
River Basins**

---

**Comprehensive Study**

**Existing Hydrodynamic Conditions in the Delta  
During Floods  
Appendix B – Summary of Martinez Downstream Boundary  
Condition for DSM2, California Department of Water  
Resources**



**US Army Corps  
of Engineers**  
Sacramento District

**To: Paul Hutton**

**From: Sanjaya Seneviratne**

**Re: Effects to Martinez Stage Due to High Flows**

**Date: April 12, 2001**

In the recently completed Comp Study we used DSM2 to determine the stage at different locations in the Delta. Upstream Flow boundaries for 100-year, 200-year and 500-year floods were received from the Corp of Engineers. For the downstream boundary at Martinez we used the 1997 January stage. Martinez, 1997 January stage was shifted to ensure that spring tide coincided with the peak flow to generate the maximum flood stages in the Delta.

According to Mike Mirmazaheri, the 1997 January Flood is fairly close to the 100-year flood. Therefore using the 1997 January MTZ stage for 100-year flood is reasonable. However the validity of using the 1997 January stage for the 200 and 500 year floods has been a concern. This memo hopes to address this issue.

In the attached Excel worksheet, Figure 1 shows the scatter plot between Daily average Stage and Flow at Martinez for the period between 1995 and 1998. A 14day running average for the same period is shown in Figure 2. Much less scatter was observed. Note that the Peak 14 day flow average is about 350,000 cfs. The peak 14day running flow averages for the 3 floods, given by the Corp of Engineers are as follows:

100 year = 365,000 cfs

200 year = 409,000 cfs

500 year = 457,000 cfs

(See sheet 2 of the workbook)

Figure 3 is identical to Figure 2 except that only flows above 200,000 cfs are plotted. A log curve is fitted to this scatter.

$$\text{Stage} = 0.7523 * \ln(\text{Flow} - 14\text{day running Average}) - 7.5394$$

If this relationship holds for flow values greater than 350,000 cfs, the calculated daily average stages for the 3 scenarios are as follows:

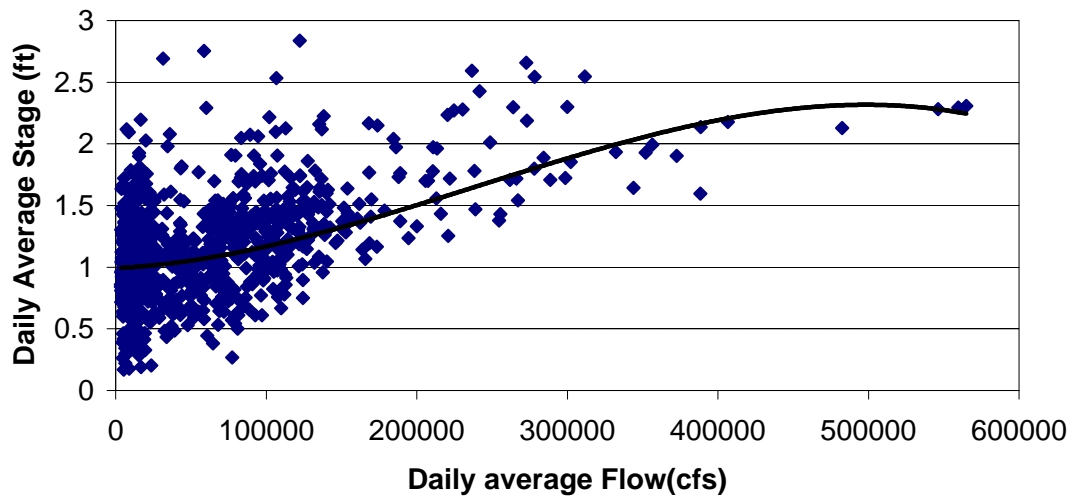
100 year = 2.095 ft

200 year = 2.181 ft

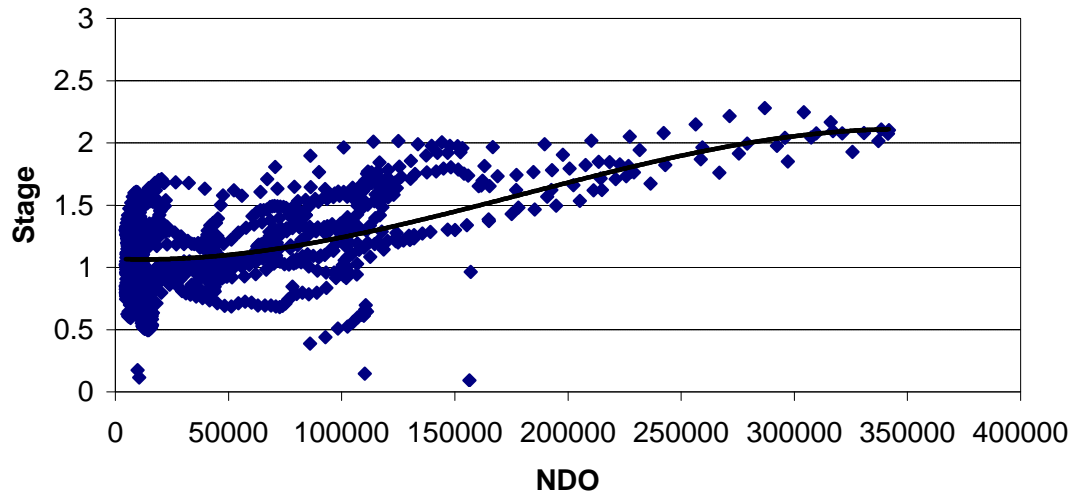
500 year = 2.265 ft

The difference of stage at MTZ for 100 and 500 year floods is less than 2 inches. Therefore any error caused by using the 1997 flood for all 3 scenarios is insignificant.

**Mtz Stage vs NDO (1995-1998)**



**14day running average at Martinez (1995-1998)**



### 14 Day Running Average (NDO >200,000 cfs)

